

Amendments to the Claims:

Please amend claims 1, 13 and 18 as shown in the following listing of claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A method of detecting edges of features in digital images comprising:

computing a first luminance characteristic of a selected region of an input digital image, said first luminance characteristic corresponding to gradient of luminance values within said selected region;

computing a second luminance characteristic of said selected region of said input digital image, said first and second luminance characteristics being related to variations of said second luminance characteristic corresponding to curvature of said luminance values within said selected region; and

determining whether either one of said first and second luminance characteristics exceeds a predefined threshold, which is indicative of a presence of an edge of a feature in said selected region of said input digital image.

2. (original) The method of claim 1 wherein said step of computing said first luminance characteristic includes computing a two-dimensional luminance gradient value for said selected region of said input digital image.

3. (original) The method of claim 2 wherein said step of computing said two-dimensional luminance gradient value includes using a vertical gradient mask and a horizontal gradient mask to derive said two-dimensional luminance gradient value.

4. (original) The method of claim 3 further comprising a step of applying a low-pass noise filter to said selected region of said input digital image.

5. (original) The method of claim 4 wherein said step of applying said low-pass noise filter includes using a low-pass noise filtering mask as follows:

$$\begin{bmatrix} 1 & 2 & 1 \\ 2 & 4 & 2 \\ 1 & 2 & 1 \end{bmatrix}.$$

6. (original) The method of claim 5 wherein said vertical gradient mask and said horizontal gradient mask incorporate said low-pass noise filtering mask, said vertical gradient mask and said horizontal gradient mask being respectively as follows:

$$\begin{bmatrix} -1 & -4 & -6 & -4 & -1 \\ -2 & -8 & -12 & -8 & -2 \\ 0 & 0 & 0 & 0 & 0 \\ 2 & 8 & 12 & 8 & 2 \\ 1 & 4 & 6 & 4 & 1 \end{bmatrix} \quad \begin{bmatrix} -1 & -2 & 0 & 2 & 1 \\ -4 & -8 & 0 & 8 & 4 \\ -6 & -12 & 0 & 12 & 6 \\ -4 & -8 & 0 & 8 & 4 \\ -1 & -2 & 0 & 2 & 1 \end{bmatrix}.$$

7. (original) The method of claim 2 wherein said step of computing said second luminance characteristic includes computing a two-dimensional luminance curvature value for said selected region of said input digital image.

8 (original) The method of claim 7 wherein said step of computing said two-dimensional luminance curvature value includes using a vertical curvature mask and a horizontal curvature mask to derive said two-dimensional luminance curvature value.

9. (original) The method of claim 8 wherein said vertical curvature mask and said horizontal curvature mask incorporate a low-pass noise filtering mask of

$$\begin{bmatrix} 1 & 2 & 1 \\ 2 & 4 & 2 \\ 1 & 2 & 1 \end{bmatrix},$$

said vertical curvature mask and said horizontal curvature mask being respectively as follows:

$$\begin{bmatrix} -1 & -4 & -6 & -4 & -1 \\ 0 & 0 & 0 & 0 & 0 \\ 2 & 8 & 12 & 8 & 2 \\ 0 & 0 & 0 & 0 & 0 \\ -1 & -4 & -6 & -4 & -1 \end{bmatrix} \quad \begin{bmatrix} -1 & 0 & 2 & 0 & -1 \\ -4 & 0 & 8 & 0 & -4 \\ -6 & 0 & 12 & 0 & -6 \\ -4 & 0 & 8 & 0 & -4 \\ -1 & 0 & 2 & 0 & -1 \end{bmatrix}.$$

10. (original) The method of claim 1 further comprising a step of determining whether the maximum luminance value of said selected region of said input digital image exceeds a predefined luminance threshold.

11. (original) The method of claim 1 further comprising a step of determining whether the maximum chrominance value of said selected region of said input digital image exceeds a predefined chrominance threshold.

12. (original) The method of claim 1 further comprising a step of counting the number of chrominance values within said selected region of said input digital image that exceeds a predefined chrominance threshold.

13. (currently amended) A system for detecting edges of features in digital images comprising:

a first filter for computing a first luminance characteristic of a selected region of an input digital image, said first luminance characteristic corresponding to gradient of luminance values within said selected region;

a second filter for computing a second luminance characteristic of said selected region of said input digital image, ~~said first and second luminance characteristics being related to variations of~~ said second luminance characteristic corresponding to curvature of said luminance values within said selected region; and

means for determining whether either one of said first and second luminance characteristics exceeds a predefined threshold, which is indicative of a presence of an edge of a feature in said selected region of said input digital image.

14. (original) The system of claim 13 wherein said first filter is configured to compute a two-dimensional luminance gradient value for said selected region of said input digital image.

15. (original) The system of claim 14 wherein said second filter is configured to compute a two-dimensional luminance curvature value for said selected region of said input digital image.

16. (original) The system of claim 13 further comprising a luminance detector operatively coupled to said first and second filters, said luminance detector being configured to determine whether the maximum luminance value of said selected region of said input digital image exceeds a predefined luminance threshold.

17. (original) The system of claim 13 further comprising a color detector operatively coupled to said first and second filters, said color detector being configured to determine whether the maximum chrominance value of said selected region of said input digital image exceeds a predefined chrominance threshold.

18. (currently amended) A method of detecting edges of features in digital images comprising:

computing a first luminance characteristic of a selected region of an input digital image, said first luminance characteristic being related to variations of luminance values within said selected region;

extracting the maximum luminance value from said selected region of said input digital image; and

comparing said first luminance characteristic and said maximum luminance value to corresponding thresholds to determine whether said selected region of said input digital image includes an edge of a text, including determining whether said maximum luminance value exceeds one of said corresponding thresholds.

19. (original) The method of claim 18 wherein said step of computing said first luminance characteristic includes computing a two-dimensional luminance gradient value for said selected region of said input digital image.

20. (original) The method of claim 18 wherein said step of computing said first luminance characteristic includes computing a two-dimensional luminance curvature value for said selected region of said input digital image.

21. (original) The method of claim 18 further comprising a step of computing a second luminance characteristic of said selected region of said input digital image, said second luminance characteristic being related to variations of luminance values within said selected region of said input digital image.

22. (original) The method of claim 21 wherein said step of computing said second luminance characteristic includes computing a two-dimensional luminance gradient value or a two-dimensional luminance curvature value for said selected region of said input digital image.

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23. (original) The method of claim 18 further comprising a step of determining whether the maximum chrominance value from said selected region of said input digital image exceeds a predefined chrominance threshold.

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Amendment and Response to Office Action